The Utah Frontier Observatory for Research in Geothermal Energy (FORGE) - a National Laboratory for EGS Research

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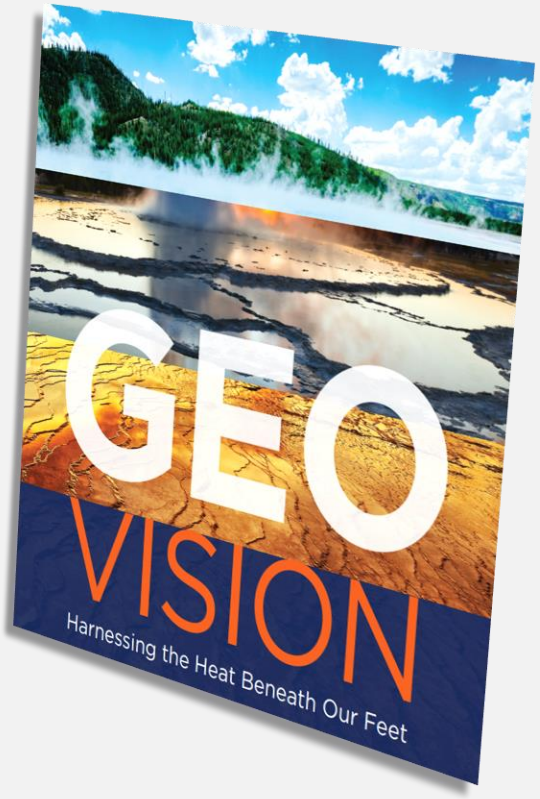
May 18, 2021

UTAH FORGE
U.S. Department of Energy

Why FORGE?

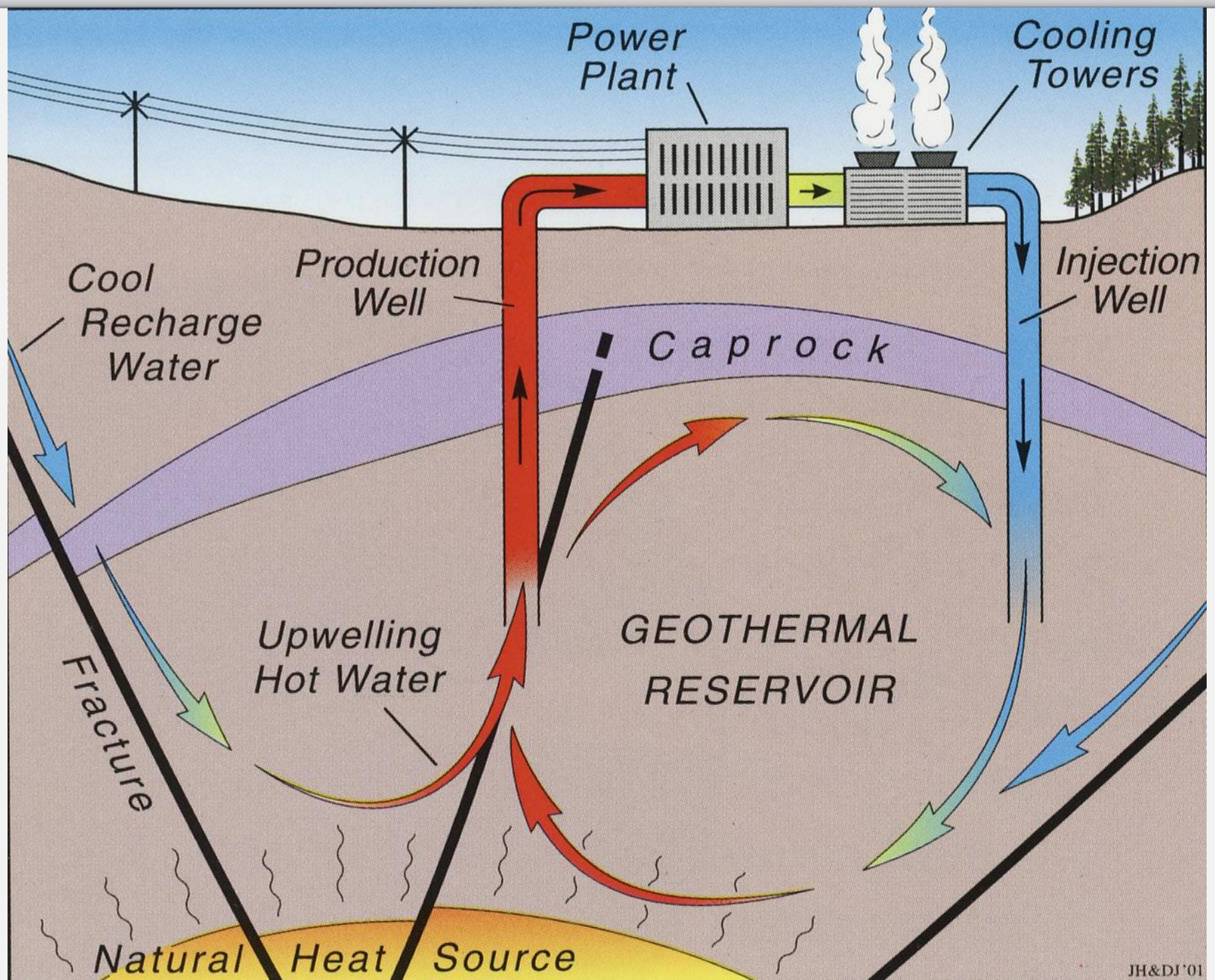
- The heat beneath our feet is enormous. If we consider the energy at depths of 2 to 6 miles, then tapping even 2% of this energy would provide more than 2000 times the yearly US energy needs.
- In 2019, DOE (Geovision report) set a goal of 60 GW of energy by 2050; today the US produces ~2.5 GW, with most coming from California, Nevada and Utah.
- Natural geothermal systems (hot spring systems) cannot meet DOE objectives.
- To access this clean, renewable, and inexhaustible source of energy, we need to create geothermal reservoirs consisting of fracture networks in hot rock. Utah FORGE will provide the opportunity to develop and test technologies for reservoir creation.



Natural Geothermal (Hot Spring) Systems

Requirements:

- Heat Source
- Fluid to transport the heat
- Permeability for fluids to extract heat from the rocks



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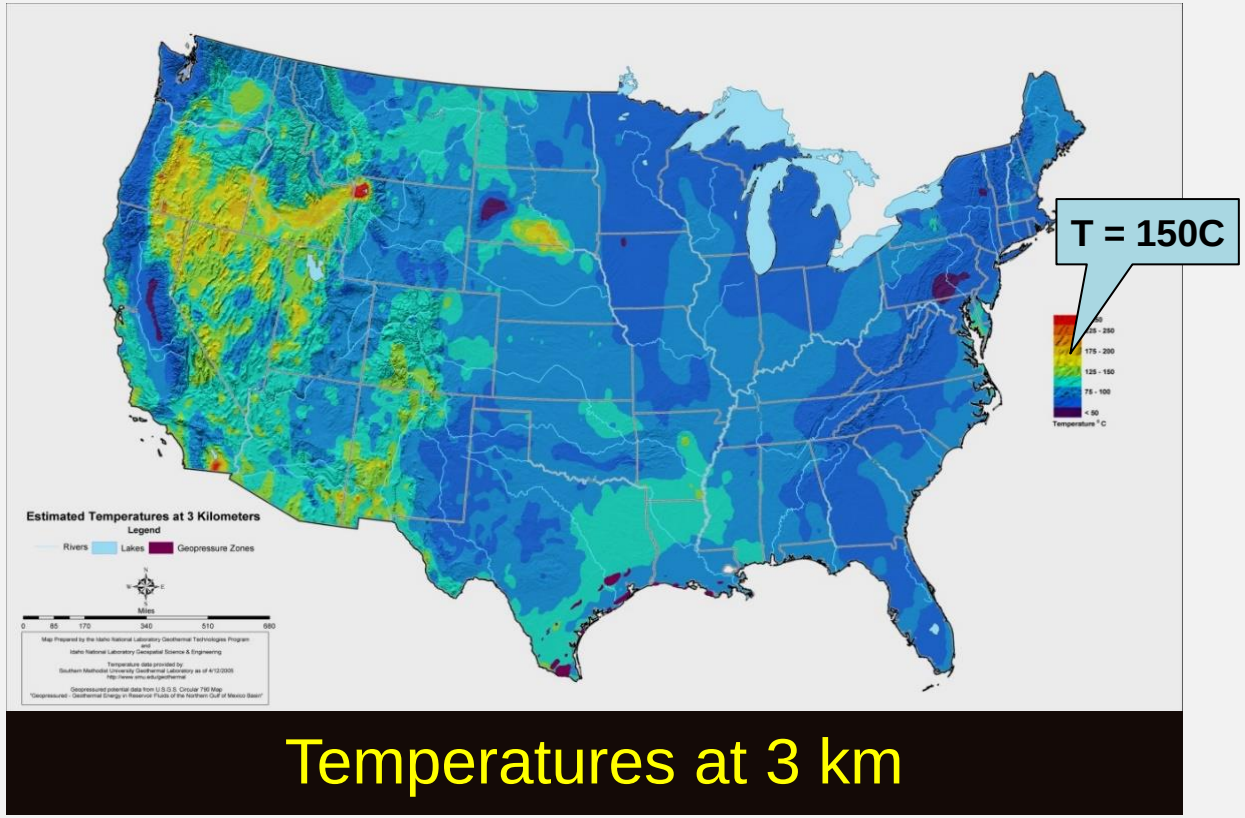
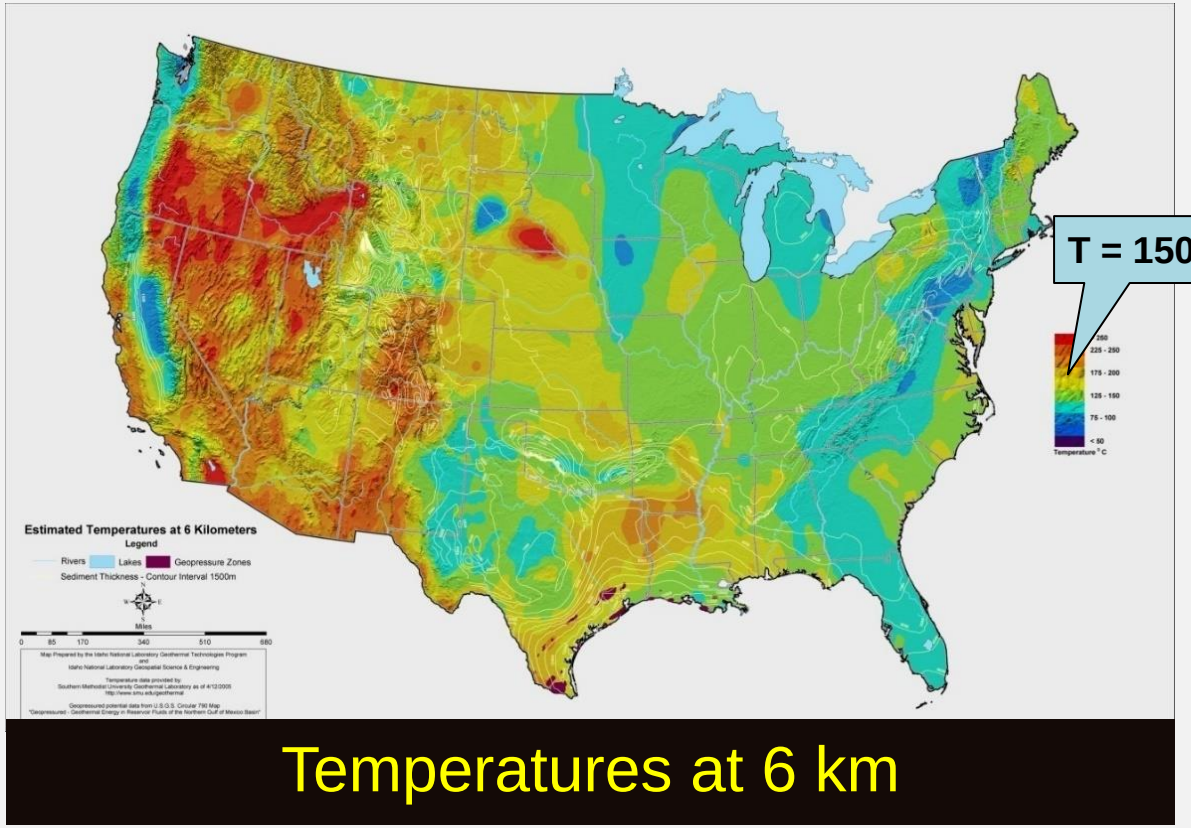
Enhanced Geothermal System (EGS) Resource Base

USGS Estimated Potential in Western States
= 518,000 Mwe



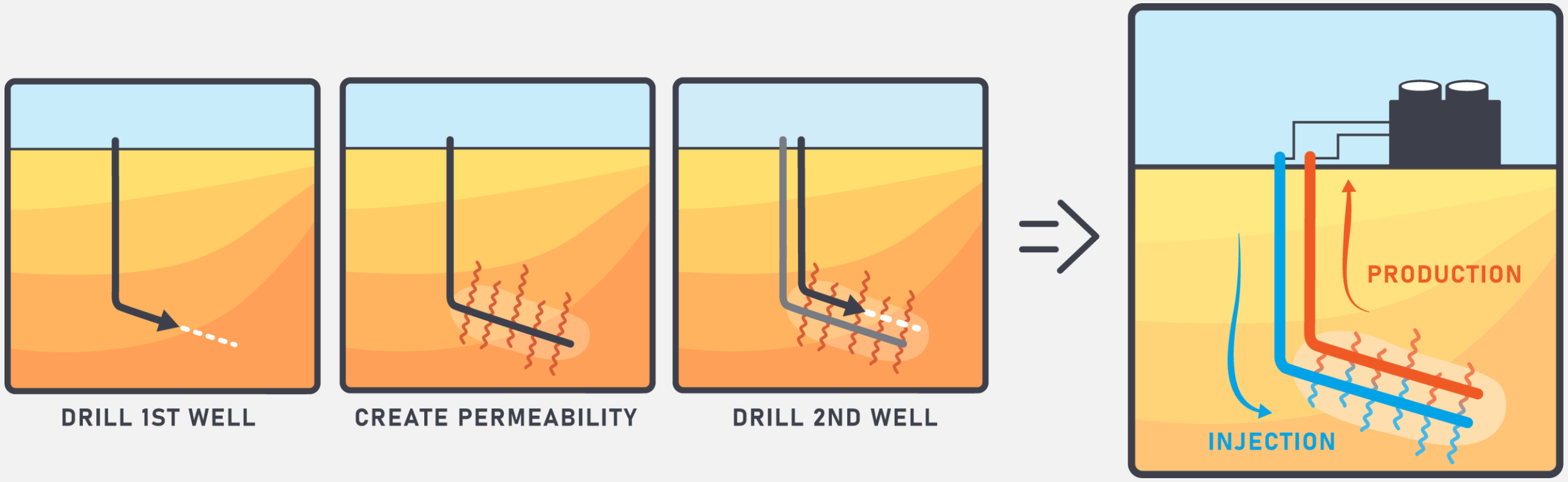
Temperatures at 3 km



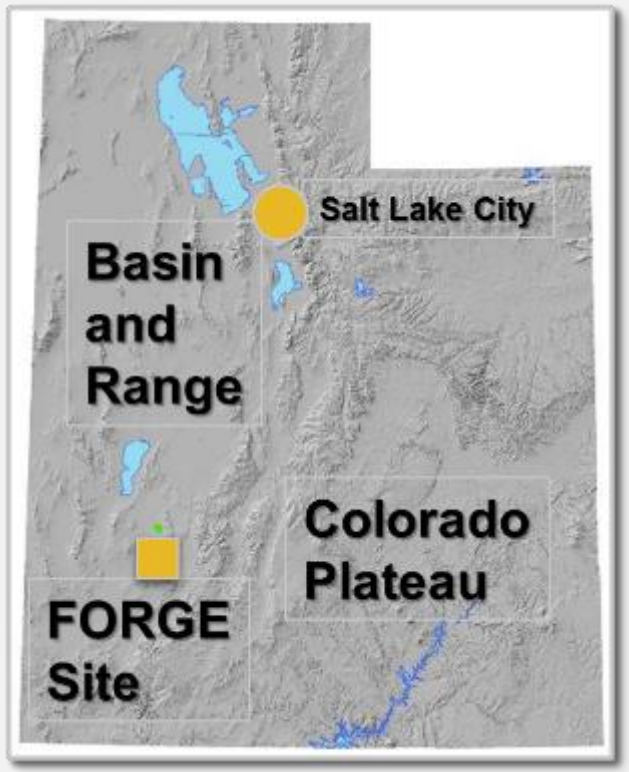
Temperatures at 6 km

Tester and others, 2006

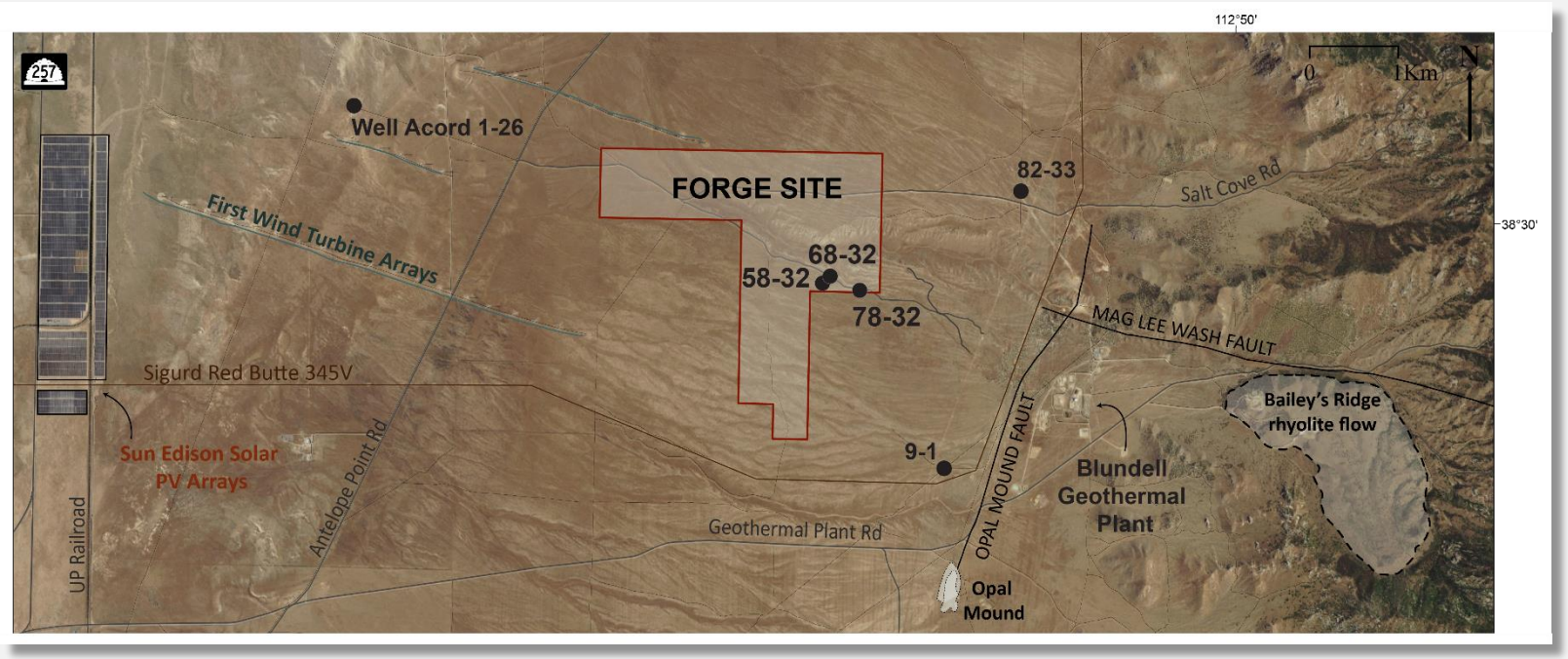
Engineering a Geothermal Reservoir



Utah FORGE - Renewable Energy Corridor



The Utah FORGE site was chosen because it best met DOE criteria and is the most representative of the geology across the country



- Geothermal fields (2)
- Windfarm
- Solar field
- Biogas facility

No endangered species
No nearby human activity
No potable water
Low potential for induced seismicity
Low natural seismicity

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Utah FORGE Infrastructure

The Future

Utah has tremendous unrealized geothermal potential that can provide clean, safe, low-cost energy, but conventional geothermal development is limited.

- **Utah FORGE is a unique**, publicly owned and operated laboratory and an essential stepping-stone to commercial large-scale EGS development.
- **We are already providing economic benefits** to rural Utah by purchasing and utilizing local services. As part of the project, we are educating the public, regulators and elected officials about geothermal energy. The benefits will increase as new technologies are successfully demonstrated.
- **Maintaining site operations beyond 2024 is critical** - testing will just be starting and no alternative facilities exist in the US or elsewhere in the world. Building a new laboratory from scratch would be fiscally irresponsible. We need your support to continue the FORGE program and the field scale research that is being conducted.

THANK YOU

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Funding provided by the US Department of Energy with additional support from Utah School and Institutional Trust Lands Administration, Beaver County, the Governor's Office of Energy Development, and Smithfield Foods.